

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

W&WSENS DEVICES INC.,	)	
	)	
Plaintiff,	)	Case No. 2:24-cv-00854-JRG
	)	
v.	)	
	)	
SAMSUNG ELECTRONICS CO., LTD.,	)	
SAMSUNG ELECTRONICS AMERICA,	)	
INC., SAMSUNG SEMICONDUCTOR, INC.,	)	
and SAMSUNG AUSTIN SEMICONDUCTOR	)	
LLC,	)	
	)	
Defendants.	)	

**PLAINTIFF W&WSENS DEVICES INC.’S DISCLOSURE OF ASSERTED CLAIMS
AND INFRINGEMENT CONTENTIONS UNDER PATENT RULES 3-1 AND 3-2**

Pursuant to Patent Rules 3-1 and 3-2, Plaintiff W&Wsens Devices Inc. (“W&W” or “Plaintiff”) makes the following Disclosure of Asserted Claims and Infringement Contentions to Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., and Samsung Austin Semiconductor LLC (collectively, “Samsung” or “Defendants”), including the claim charts attached hereto as Appendices A-1, A-2, B-1, B-2, C-1, C-2, D-1, D-2 and E (the “Appendices”) for each of the Accused Products of U.S. Patent Nos. 9,525,084 (the “’084 Patent”), 10,446,700 (the “’700 Patent”), 10,468,543 (the “’543 Patent”), 11,621,360 (the “’360 Patent”), and 12,087,871 (the “’871 Patent”) (collectively, the “Asserted Patents”) and the accompanying document production.

W&W makes this disclosure based upon information presently known and reasonably available to it as of the date hereof. This disclosure is preliminary, as W&W’s investigations are ongoing and discovery has not yet commenced in this action. W&W has not received any

Dated: January 7, 2025

By: /s/ Aaron Frankel

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CERTIFICATE OF SERVICE

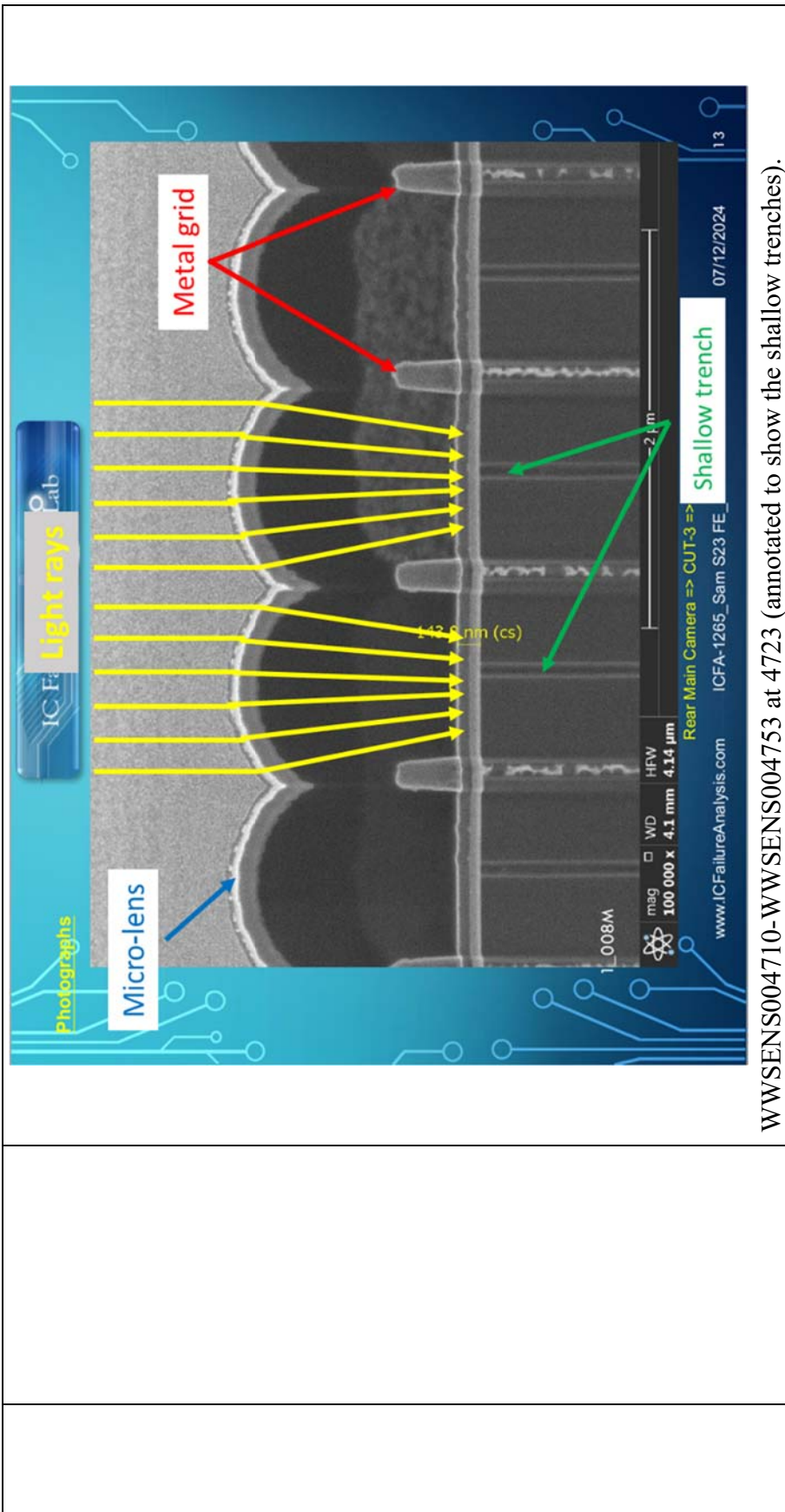
The undersigned hereby certifies that on January 7, 2025, a true and correct copy of the foregoing **PLAINTIFF W&WSENS DEVICES INC.'S DISCLOSURE OF ASSERTED CLAIMS AND INFRINGEMENT CONTENTIONS UNDER PATENT RULES 3-1 AND 3-2** was served via electronic mail upon counsel of record for Defendants as indicated:

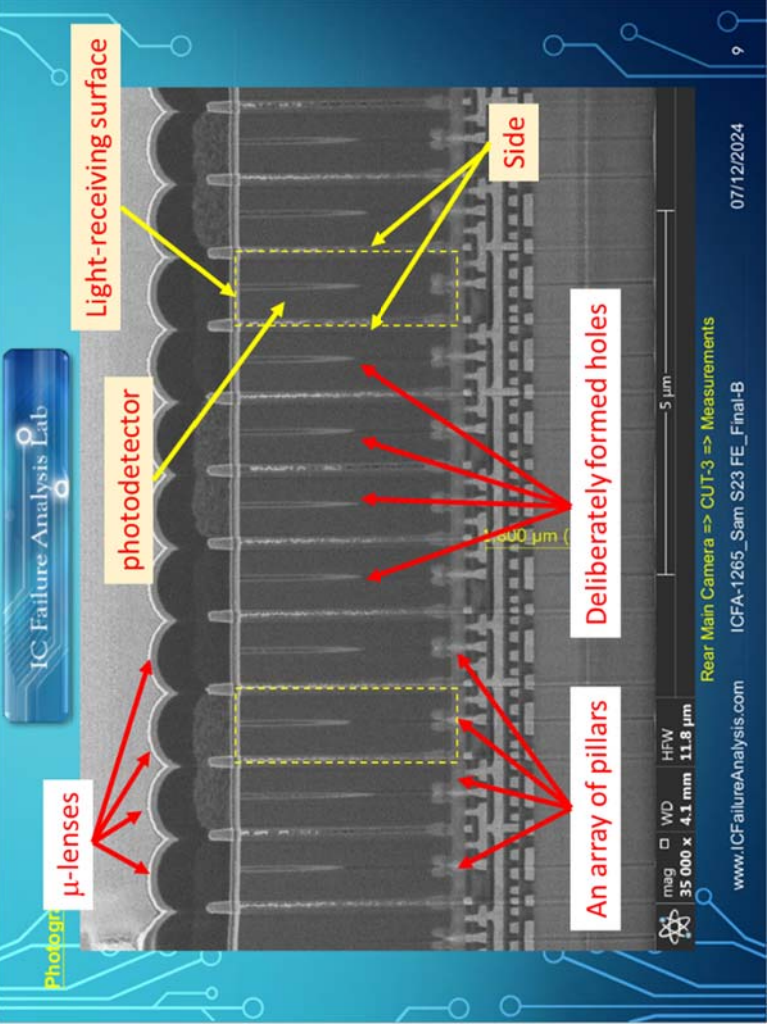
Melissa Smith
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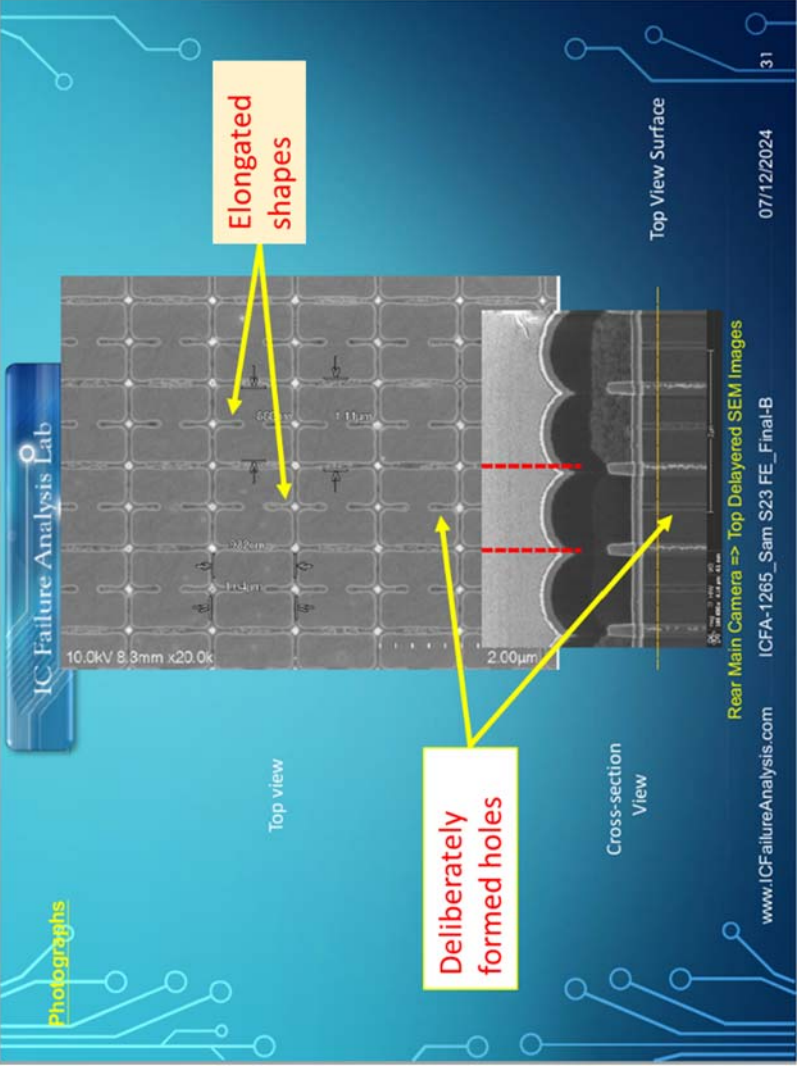
By: /s/ Aaron Frankel
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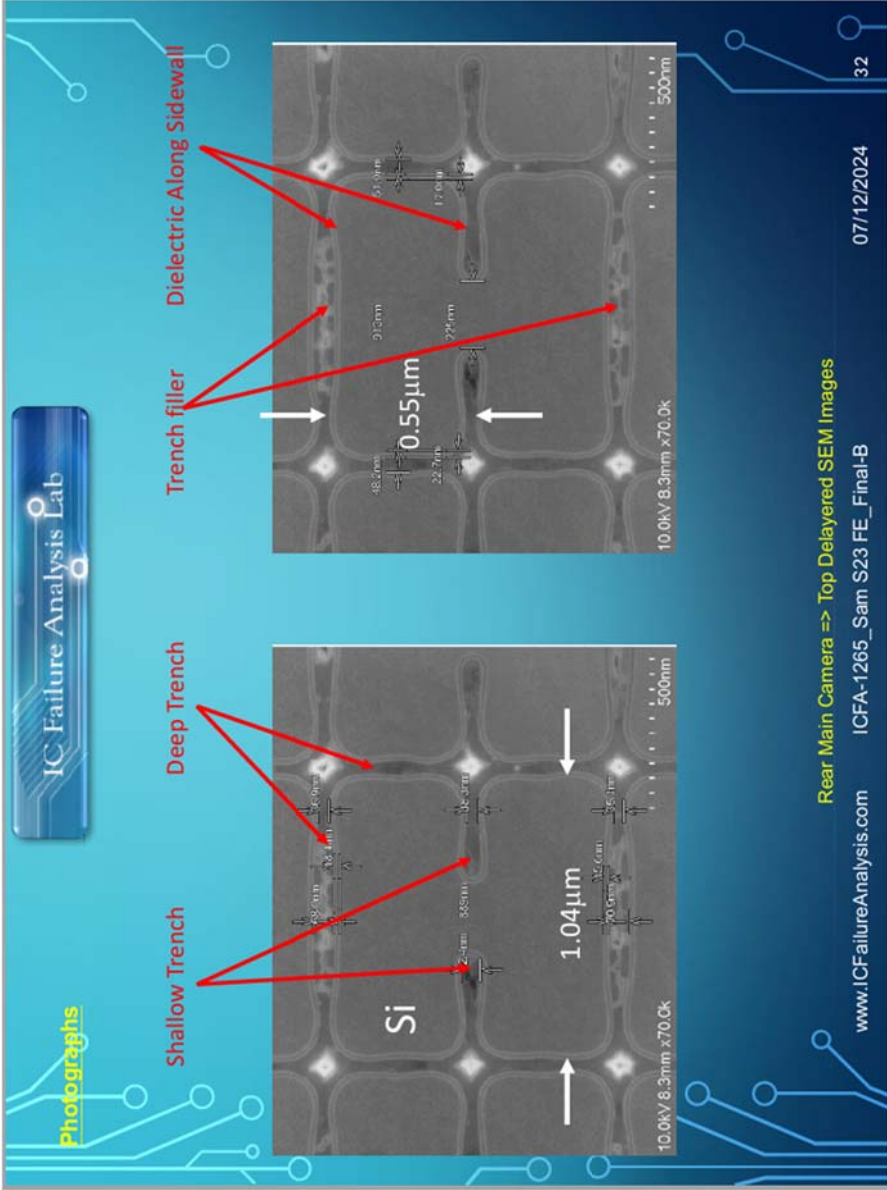
APPENDIX A-1

		<table border="1"><caption>Approximate data points from Figure 8</caption><thead><tr><th>Wavelength (nm)</th><th>ISOCELL (%)</th><th>ISOCELL Plus (%)</th></tr></thead><tbody><tr><td>400</td><td>10</td><td>10</td></tr><tr><td>450</td><td>20</td><td>20</td></tr><tr><td>500</td><td>40</td><td>40</td></tr><tr><td>550</td><td>80</td><td>80</td></tr><tr><td>600</td><td>100</td><td>100</td></tr><tr><td>650</td><td>80</td><td>80</td></tr><tr><td>700</td><td>10</td><td>10</td></tr></tbody></table>	Wavelength (nm)	ISOCELL (%)	ISOCELL Plus (%)	400	10	10	450	20	20	500	40	40	550	80	80	600	100	100	650	80	80	700	10	10
Wavelength (nm)	ISOCELL (%)	ISOCELL Plus (%)																								
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1.b	one or more holes that are deliberately formed into the light-receiving surfaces,	WWSENS007472-WWSENS007475 at 7474 (showing color filters operating selective visible and infrared wavelength ranges). Fig. 8. The normalized quantum efficiency of ISOCELL and ISOCELL Plus [2]. WWSENS007472-WWSENS007475 at 7474 (showing color filters operating selective visible and infrared wavelength ranges). Samsung's CIS Accused Products have one or more holes (shallow trenches) that are deliberately formed into the light-receiving surfaces, as shown below. WWSENS004710-WWSENS004753 at 4723.																								



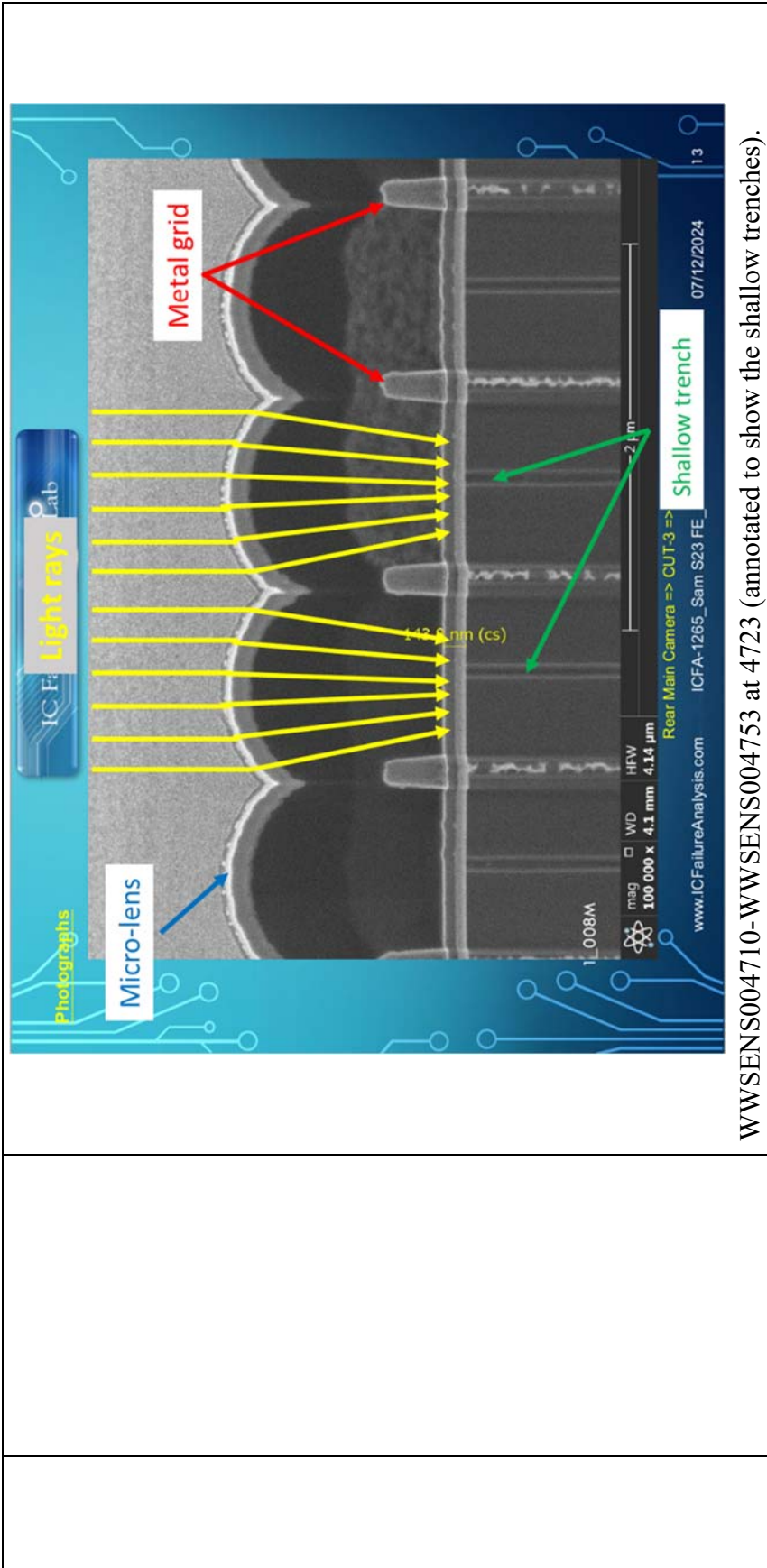
		 WWSENS004710-WWSENS004753 at 4719 (annotated to show an array of pillars having light-receiving surfaces and sides).
1.b.1	have elongated and/or other shapes at said light-receiving surfaces,	Samsung's CIS Accused products have shallow trenches, fabricated in the pillars of the photodiodes, as shown below, which are elongated shapes at the light-receiving surface. WWSENS004710-WWSENS004753 at 4741.

	 The image displays two SEM views of a device. The top view (left) shows a grid of circular features with elongated shapes and deliberately formed holes. The cross-section view (right) shows the depth of these holes. Annotations include 'Elongated shapes', 'Deliberately formed holes', and 'Top View Surface'. Technical details include '10.0kV 8.8mm x20.0k', '2.00µm', and 'ICFA-1265_Sam S23 FE_Final-B'.	
1.b.2	extend into the photodetectors to a depth of 100 to 10000 nm,	WWSENS004710-WWSENS004753 at 4741 (annotated to show elongated shapes at light-receiving surface and holes fabricated along the cross sections). As shown in the SEM image below, the trenches extend 2.387 micrometers (2,387 nanometers), which is within the range of 100 to 10000 nm.

17	The integrated structure of claim 15, in which at least some of said elongated trenches crisscross.	As shown below, the elongated trenches crisscross.  Photographs IC Failure Analysis Lab Shallow Trench Deep Trench Trench filler Dielectric Along Sidewall Si 0.55µm 1.04µm 10.0kV 8.3mm x70.0k 10.0kV 8.3mm x70.0k www.ICFailureAnalysis.com ICFA-1265_Sam S23 FE_Final-B 07/12/2024 32 WWS004710-WWS004753 at 4742 (SEM image showing trenches crisscrossing).
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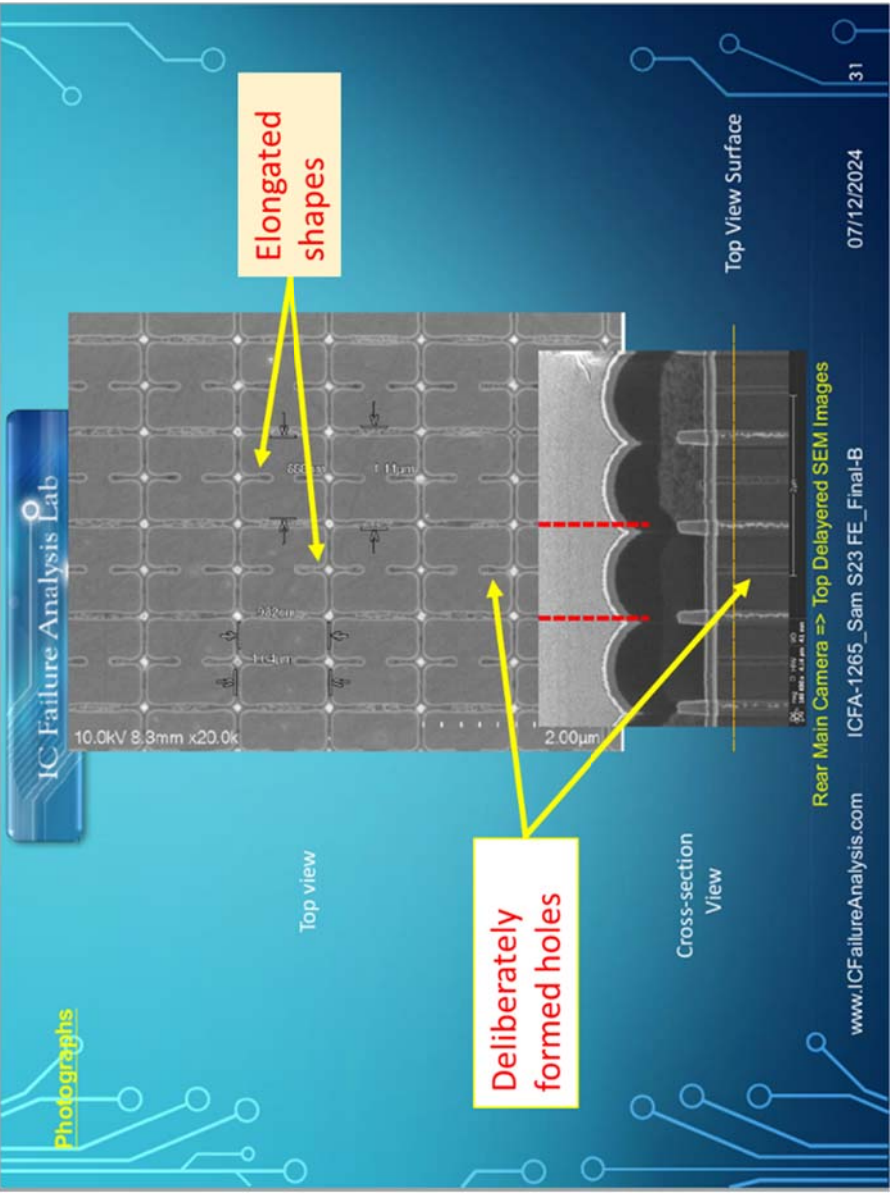
APPENDIX A-2

		<table border="1"><caption>Approximate data points from Figure 8</caption><thead><tr><th>Wavelength (nm)</th><th>ISOCELL Efficiency (%)</th><th>ISOCELL Plus Efficiency (%)</th></tr></thead><tbody><tr><td>400</td><td>10</td><td>10</td></tr><tr><td>450</td><td>20</td><td>20</td></tr><tr><td>500</td><td>40</td><td>40</td></tr><tr><td>550</td><td>80</td><td>80</td></tr><tr><td>600</td><td>100</td><td>100</td></tr><tr><td>650</td><td>80</td><td>80</td></tr><tr><td>700</td><td>10</td><td>10</td></tr></tbody></table>	Wavelength (nm)	ISOCELL Efficiency (%)	ISOCELL Plus Efficiency (%)	400	10	10	450	20	20	500	40	40	550	80	80	600	100	100	650	80	80	700	10	10
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1.b	one or more holes that are deliberately formed into the light-receiving surfaces,	WWSENS007472-WWSENS007475 at 7474 (showing color filters operating selective visible and infrared wavelength ranges). Fig. 8. The normalized quantum efficiency of ISOCELL and ISOCELL Plus [2]. Samsung's CIS Accused Products have one or more holes (shallow and/or deep trenches) that are deliberately formed into the light-receiving surfaces, as shown below. WWSENS004710-WWSENS004753 at 4723.																								



WWSENS004710-WWSENS004753 at 4723 (annotated to show the shallow trenches).

		 WWSENS004710-WWSENS004753 at 4719 (annotated to show an array of pillars having light-receiving surfaces and sides).
1.b.1	have elongated and/or other shapes at said light receiving surfaces,	Samsung's CIS Accused products have shallow and/or deep trenches, fabricated in the pillars of the photodetectors, as shown below, which are elongated shapes at the light-receiving surface. WWSENS004710-WWSENS004753 at 4741.

	 The image displays two SEM views of a photodiode array. The top view (left) shows a grid of photodiodes with elongated shapes and deliberately formed holes. The cross-section view (right) shows the depth of the photodiodes. Annotations include 'Elongated shapes' and 'Deliberately formed holes' with arrows pointing to the respective features. Technical details include '10.0kV 8.3mm x20.0k', '2.00µm', and 'Top View Surface'.	
1.b.2	extend into the photodetectors to a depth of 100 to 10000 nm,	WWSENS004710-WWSENS004753 at 4741 (annotated to show elongated shapes at light-receiving surface and holes fabricated along the cross sections). As shown in the SEM images below, the trenches extend 2.387 micrometers (2,387 nanometers), which is within the range of 100 to 10000 nm.

17	The integrated structure of claim 15, in which at least some of said elongated trenches crisscross. The image displays two SEM views of a photodetector array. The 'Top view' on the left shows a grid of circular photodetectors with elongated rectangular trenches between them. Annotations include 'Photodetector under one color filter' pointing to a detector, 'Elongated shapes' pointing to the trenches, and 'Overlapping holes' pointing to the intersections of trenches. The 'Cross-section View' on the right shows the vertical profile of the array, with 'Deliberately formed holes' pointing to gaps in the top layer. Technical details include '10.0kV 8.3mm x20.0k' and '2.00µm' scale bar. Metadata at the bottom reads: 'ICFA-1265_Sam S23 FE_Final-B', 'www.ICFailureAnalysis.com', 'Rear Main Camera => Top Delayed SEM Images', and '07/12/2024 31'. WWSENS004710-WWSENS004753 at 4741 (annotated to show elongated trenches crisscrossed).
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